Macintosh® FAQ

Frequently Asked Questions
And Answers

by David Lerner

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Contents

2 Tekserve, New York's Old Reliable Mac Service Shop
3 How to Avoid Coming to Tekserve in a Panic
4 Being Prepared
4 Crisis Situations
7 Formatting Hard Disk Drives, Cartridges & Defragmenting
9 Printers
10 USB, Printers and Serial Devices, or Who Took the Serial Port?
12 SCSI (Small Computer System Interface)
14 FireWire
15 Bombs and Crashes
17 The System
19 Memory
20 Viruses
20 PowerBook Specific Items
22 Communications and the Internet
22 Other Questions
24 File Sharing

Command Key Combinations

I got the Mac because I like menus and hate using command keys. But some Mac actions require command keys. What are the common ones?

Ignore internal hard disk drive (some Macs ignores selected startup device)	-option-shift-delete while booting
Startup Manager on very recent Macs	Option while booting
Boot from CD-ROM (most recent Macs)	"C" while booting
Boot in FireWire Target Mode (some Macs)	"T" while booting
Disable extensions at startup	Shift while booting
Open Extensions Manager at startup	Spacebar while booting
Disable startup items	Shift just before Finder loads
Close all open windows (can fix weirdness)	Option while Finder loads
Rebuild Desktop	-option (but read the question about this)
Zap PRAM—System 7.x–8.x	-option-P-R while booting
Zap PRAM—System 6	-option-shift while opening Control panel
Reset Applevision Display (v1.52 or later)	-option-A-V while booting
Original iMac—hard reset (after a crash if any, lose all unsaved work)	Use straightened paperclip in ◀ hole behind connector access door on the right side of iMac
Software reboot (lose all unsaved work) to restart after a crash on some Macs	-control-power on

Phone Numbers for Help and Support

Who do I call...?

Tekserve (www.tekserve.com)	212 929-3645
Apple Hardware & Software Support (www.apple.com)	800-SOS-APPL (800 767-2775)
Apple Literature FaxBack service (www.apple.com)	800 510-2834
NovaWorks Apple VAR, on-site service	212 604-9999

Tekserve, New York's Old Reliable Mac Service Shop

What's Tekserve?

We are electronic engineers who used Macs to design products such as robust public access audio/video equipment, industrial controls and product simulators. When our Macs started breaking, we were shocked by the repair costs, so we learned how to fix them.

Tekserve focuses on Macintosh service, repair and upgrade, both in and out of warranty. We always give free estimates. Although we have a special emphasis on fast turnaround PowerBook repair and upgrade (frequently while you wait), we work on all Macintosh models (and clones too). We have a high success rate and reasonable prices for data recovery, and we only charge if we succeed. We stock memory, modems, drives and service parts for nearly all Macs, and we are also happy to install upgrades that you buy elsewhere.

We also stock new Macs, PowerBooks and printers at mail order prices, and we can frequently custom configure and deliver them the same day. We are open 9 to 6 weekdays, Tuesday evening until 8, and 10 to 4 on Saturdays, with free validated parking (at 101 West 23rd Street or at 170 West 23rd Street). No appointment is needed, just come on by.

Isn't one service place as good as another?

Every service shop is only as good as their last repair. What we think sets Tekserve apart is that service is our business—our prime focus is on repair, upgrade and custom configuration. We think that's reflected in our shop—no receptionist, no hidden service areas, just a bunch of well-equipped workbenches and technicians (and a huge inventory of parts).

We do sell lots of Macs too, and in fact we can frequently configure a system (or ten systems) and deliver the same day. Our approach to sales is based on service; not just trying to move boxes, but actually meeting the customer's needs. For instance, we offer turnkey Final Cut Pro video editing systems with everything you need to plug in and start editing. For corporate purchasers we can configure and ship computers to multiple locations, with your standard software install already loaded and asset tags in place.

Our motto, copied from an old Walker Evans photo from the Library of Congress that we made into a postcard, is "Honest Weights, Square Dealings." And we mean it. If you are ever dissatisfied in any way with our service, please let us know and we'll try to make it right.

Do you really fix things, or just swap parts?

We've been humbled a little on this one. We started our business on the premise that we would always fix the broken part, not just swap it. When someone had a floppy drive that was a little out of alignment, we aligned it. If a capacitor on an analog board was bad, we replaced it. But too many things came back with further problems and what seemed like a good policy backfired. People want their repair right now, but careful repair and testing takes time. So now we insist on swapping a bad part for a new or refurbished one.

So, yes, we actually fix things, but to get the customer in and out quickly we usually swap parts. We think it's the best of both worlds, because it allows us to stand behind our work with a one-year warranty, and it reduces the need for people to use that warranty. (Note: our Apple warranty and AppleCare repairs are always performed with Apple Service Parts and carry a three-month Apple warranty.)

Don't most other dealers swap brand new parts?

No. Service swap parts are guaranteed (although usually only for three months) to work the same as new ones, but Apple

prohibits dealers from claiming that service parts are new. The parts are usually repaired and refurbished at Apple's depot.

Do you provide a messenger service to pick-up and deliver stuff?

We'd love to, but the messenger services say that picking up broken equipment is too risky for them, because it's hard to prove what was already broken in the unlikely event that they break something else. If you send us stuff by messenger, please attach a note telling us who, what, when and why. You'd be surprised at the mystery parcels we receive. Of course we do deliver new systems, cables and accessories by messenger (or UPS or Fedex).

Do you offer corporate accounts?

Our low cost structure is geared toward payment by cash, check or credit card when the service is completed. We are happy to accept corporate credit cards, including American Express & Diners Club. If your company's structure requires that you be billed, ask to talk to David and we'll send you a credit application. We can also accept written purchase orders from Fortune 1000 companies, governmental entities and universities.

Do you offer financing on new computers?

Yes, for individuals purchasing up to $10,000 of equipment we offer the Apple Instant Loan program. For corporate purchases from $2,500 up to millions of dollars, we offer leasing plans from Apple Commercial Credit and others. All financing is subject to credit approval.

How to Avoid Coming to Tekserve in a Panic

1 Save multiple copies of critical files on multiple disks, cartridges or tapes. In short, backup constantly and religiously, especially when you are under deadline pressure. Save early and often. (If you use OS 9 and the Internet, you can save an extra copy on an iDisk on Apple's web site.)
2 Don't save the only version of an important file on a floppy disk or a Zip or Jaz disk (really you should never have only one copy of an important file). Make multiple copies. Don't erase your last backup to make a new one—you may be backing up a corrupted file and will need the previous backup.
3 At least one of your recent backups should be in a different location (i.e. off-site).
4 Install and use the latest version of your preferred anti-viral software. Disinfectant has been discontinued and is no longer sufficient—you need to use one of the commercial programs and update it monthly (really).
5 Run the latest Apple Disk First Aid on your drives once a month or so (always backup first).
6 If you own a current version of Norton Utilities (5.04 was current as of June 2000), enable FileSaver. (Norton 4 and above only work on Power PCs, use Norton 3.5.2 on 68XXX Macs.)
7 Own the software you use, read the manuals, keep the original program disks or CDs in a safe place.
8 Minimize the number of gewgaws you add to your System, and never add two gewgaws with overlapping functions. (e.g. don't use SuperClock and the Apple menu bar clock, don't use Trashback and Undelete). "Screen savers" are mostly entertainment programs—by the time a color screen burns-in, it will probably be fuzzy too. To save your screen, dim the monitor or turn it off. All recent monitors work with Apple's Energy Saver control panel to downshift to a dark low-power mode after a certain idle time. Some "screen savers" will interfere with that.

Being Prepared

Spend a little time getting ready to cope with a problem before you have one. All recent Macs come with a bootable CD-ROM with System software—keep it handy.

If you own a copy of Norton Disk Doctor or DiskWarrior, keep it up to date. If your hard drive is not an original Apple drive, or you have reformatted it with some other software (FWB Hard Disk ToolKit, La Cie Silverlining, etc.), keep a copy of that formatter/driver software handy, preferably on a disk that will boot your Mac.

My hard drive has trouble getting going, but it always starts after a few tries. Should I bother backing it up?

No, your data is of no importance and you can probably recreate it within a few months. After all, you have lots of paper printouts to recopy from and you're a fast typist. Sorry to be facetious, but we've had people come into Tekserve for urgent data recoveries with this story! If your computer or hard drive is doing anything unusual—squeaking, chirping, having trouble getting going, read/write errors, missing or damaged files—take it as a reminder to do a complete backup. Please!

Crisis Situations

I turned on my computer and just see a little blinking picture of a floppy disk or a question mark.

1 If you have one of the first Macs that came with an IDE internal drive, this may be caused by an older version of Drive Setup. Get Apple's Drive Setup 1.3.1 or later (1.92 is current June 2000) and follow the instructions. The affected models are Performa and Power Mac 5400, 5410, 5420, 5430, 5440, 5500, 6400, 6410, 6420, 6500, 6360 and Twentieth Anniversary Macintosh.
2 Try starting from the CD-ROM (or bootable floppy disk) that came with your computer. If the CD or disk is ejected, you may have a stuck button on your mouse or trackball (or it isn't really a startup disk and is lacking the software needed to boot your computer). With the Mac turned off, unplug the mouse or trackball and see if it now starts okay from the CD or your hard disk. If so, the mouse or trackball is the culprit.
3 If it starts up okay from the CD, and you see your hard disk icon below the CD icon, the System on your hard drive may have become damaged. If so, backup your important files, run Disk First Aid to repair any directory damage, and then reinstall the System. If that doesn't solve the problem, try a "clean System install" described later in this FAQ.
4 If your hard disk drive icon doesn't show up under the CD or floppy icon, you can try running Disk First Aid. Warning: In some instances repair programs will make things worse. This is why we say to always backup everything; so that, if a repair fails, you have another recourse. If you have any doubts or cannot afford to lose the files on your hard drive, you may want to bring your computer to Tekserve before running any repair programs. We have ways of doing repairs without taking chances. If Disk First Aid sees your hard drive, it may be able to fix problems in the directory. If it finds things to fix, run it again to be sure that everything is really fixed. If it keeps saying it fixed the same thing each time you run it, it's lying to you.
5 If you own Norton Utilities or Tech Tool Pro or DiskWarrior, you can try them now (but please read the next question first).
6 If this didn't solve your problem, call us.

Can I make things worse by doing repairs with Norton Disk Doctor, Tech Tool, DiskWarrior, or Disk First Aid?

Unfortunately, yes. In most instances these

programs are good tools that help solve problems. But "repairing" certain problems can leave you worse off than before—in some cases, even take a disk from which a professional could easily recover data to a complete loss situation. Basically, when your drive's directory is scrambled, anything that writes to the disk has the potential to do harm. Running Norton Disk Doctor or Tech Tool Pro 2 actually writes to the directory that it's fixing, so occasionally it does damage. However, running a data recovery utility such as Data Rescue, Norton's Volume Recover or Unerase should be fine, if you copy the recovered files to a different drive. If you recover the files onto the damaged drive, you will be overwriting other data you wish to recover, compounding existing directory damage, and making things worse. The latest Norton Utilities offers to save an "undo" file so that you can go backwards, but I've had Norton crash in the middle of a repair, and the Undo file itself was corrupted or incomplete.

You can also use DiskWarrior to recreate a disk directory, but don't rush to write the new directory to the disk. Instead, mount the volume using the new directory and backup your files to another drive. Check the files thoroughly before you write the new directory or reformat the old drive.

If you are well backed up you can use any repair utility with confidence. If you are not backed up and your data is essential to you, consider getting professional help. We're not trying to scare you into always hiring us—we're trying to scare you into always making lots of backups!

My keyboard doesn't work, and I get little beeps when I press a key.

You have probably accidentally enabled Easy Access, a special Apple control panel to help handicapped people use the Mac keyboard. Open the Easy Access control panel and turn off each of its features.

I turn on my computer and hear a series of musical notes (or what sounds like a car crash or broken glass), or I get a picture of an unhappy Mac on the screen with some numbers under it.

This can happen if you have certain older CD-ROMs in your drive when you boot, so first try removing any CD-ROMs. If that doesn't cure it, read on:

Every time you start your Mac it does some diagnostics on itself. With these symptoms, the Mac is telling you that those diagnostics failed.

1 Turn everything off, and disconnect any external SCSI devices (on newer Macs, disconnect USB and FireWire devices). These are things such as scanners, hard drives, Zip, Jaz and so on. Now that your external stuff is disconnected, start the Mac and see if the problem was caused by those external devices. If so, reconnect them one at a time to see when the problem returns (with SCSI you must turn everything off before connecting or disconnecting devices).
2 Zap the PRAM. This is special parameter memory that stores crucial settings for your Mac and can become corrupted. Zapping it means resetting it to the original defaults. On newer Macs, hold down -option-P-R while turning on the Mac. Keep holding those keys down until you hear the startup bong two or three times. (On the PowerBook 190, 1400, 2300, 2400, 3400 and 5300, when you have successfully zapped the PRAM the screen may be blank and the green sleep LED may be steadily lit, and you will need to then press the reset button on the rear of the computer.) If this didn't help or didn't work, continue with the next step.
3 Restart holding down -shift-option-delete. You have to hold down all four buttons together, and then, while keeping those buttons down, turn on the computer. This tells the computer to ignore the

normal startup drive. If instead of getting the sad tones or sad Mac you now get a blinking picture of a disk or folder, then your disk driver (or the System file) is probably corrupted. The disk driver is special information on your hard drive that tells the Mac how to talk to the hard drive.

We're getting into dangerous territory if you aren't backed up. If you are backed up, or not concerned about anything on your hard drive, try restarting from a System CD-ROM or Disk Tools floppy while holding down those four buttons. If that works, run Apple Drive Setup and select "Update driver" from the Functions selection. Warning: Don't click "Initialize"—that will wipe out everything on your drive. If you have used a driver-level compression program such as eDisk, Times Two or Stacker, even updating the driver can wipe out your drive.

If Apple Drive Setup says that "drive selection failed" or "not supported," see the next big section further on about formatting software.

4 If you recently added RAM to the computer, you may want to try removing it (if you are comfortable doing this and have the right anti-static equipment).

5 If you still get the sad Mac tones, your problems are more serious—either memory, the motherboard, the hard drive, or an add-on such as an accelerator, nuBus or PCI card. At this point if you still have trouble, you should probably bring the computer in for service.

My mouse or trackball is acting weird.

Shut down the computer, remove the bottom cover of the mouse (or the twist ring on the trackball), clean the rollers with a Q-tip and just a drop of alcohol. That black ring around the center of the rollers is not a special friction coating—it's congealed dirt and junk.

If you have trouble with the trackpad on recent PowerBooks, check the Trackpad control panel. At the bottom there are options to use the trackpad for clicking and dragging—try deselecting these options. You may also want to try a slower tracking speed.

My mouse and keyboard stopped working.

Try unplugging and replugging the mouse. If that doesn't help, turn off the computer, and try plugging only the mouse into the back of the computer and restarting. If it works, your computer itself is okay, but there is probably a bad connection in the ADB or USB jack in your keyboard. Try a replacement keyboard.

Note: Recent Macs and iMacs have USB, and it is fine to plug in USB devices (and FireWire devices) when the computer is on. USB devices have square or rectangular plugs and sockets. Older Macs use ADB ports with a round four pin plug and socket, and those can be damaged by hot-plugging devices. So you see, progress can be good.

A disk is stuck in my Mac.

Don't pull it out with pliers, that may destroy the drive. Try restarting the computer while holding down the mouse button. If that doesn't work, try ejecting the disk by pushing a straightened paper clip into the little hole alongside the drive. You may have to push fairly hard on the paper clip. If that doesn't work, the Mac probably needs to be disassembled to get the disk out, and the drive may be damaged.

My Mac froze up. Now what?

First check for simple stuff, like the mouse connector came loose from the keyboard.

If you have unsaved work, there is a very slim chance of rescuing it. -option-escape will let you quit the current program (the one that froze) and you might be able to get to any other programs and save your work in them before quitting and restarting. But you will lose what you've done in the current program. When you restart, move the "rescued items" folder out of the trash (if there is one). It

might contain temporary files used by your crashed program, and your unsaved work might be partly there.

If the above didn't work, you've probably lost all your work since you last saved. If that's okay with you, restart with the power switch or the reset button or press these three buttons together: -control-Power-on (on Macs without a reset button).

My trackpad is jumping around.

Brushing a second finger against the trackpad can cause this, but trackpads respond to the capacitance of your finger and are affected by moisture. Try washing and drying your hands. Apple has a "Trackpad Climate Control" extension that may help, and there are plastic overlays to reduce the sensitivity of the trackpad.

My computer starts normally, but then the cursor freezes in the upper left corner of the screen when the Finder loads.

This can be a bad mouse connection (see earlier question), or a software problem (try starting from the CD that came with the Mac), or a problem with a SCSI or USB device (with the power off, disconnect all external SCSI and USB devices). Try another mouse.

I just spilled beer/tea/cough syrup on my keyboard (well, my cat threw up on it).

Shut down, unplug the keyboard from the computer, and turn it upside down. Wait a day or few for it to dry. It may all be okay now. If not, bring it for service. (Byte columnist Jerry Pournelle says just take it in the shower with you and rinse it thoroughly and then dry it for a few days, but he also believes in Star Wars missile defenses.) If it's a PowerBook, remove the battery and the power cord and bring it in for service immediately. Don't turn it on! The internal backup battery can cause electrolytic corrosion and lead to an expensive motherboard replacement.

Every five to thirty minutes my computer slows down to a crawl and there is a lot of disk activity. What's wrong?

It could be the Autostart worm virus. See "Viruses" later in this FAQ. With Mac OS 8.6 it could also be a problem with DHCP (involved in TCP/IP networking and used to access some networks or DSL/cable modems), updating to Mac OS 9.0 or higher should solve the problem.

Formatting Hard Disk Drives, Cartridges & Defragmenting

SCSI Probe and some formatting programs don't see the drive in my Power Mac/Performa/LC/Quadra 63X, 5xxx, 6xxx, 4400, G3, G4, PowerBook G3, 150, 190, 1400, 2300, 2400, 3400, 3500, or 5300 series, now what?

The internal hard drive on these and other recent Macs is not a SCSI drive, it is an IDE or EIDE (enhanced integrated drive electronics, also called ATA) drive, which used to be more popular in the PC world than the Mac world. These are good drives, just different. Apple has been able to reduce (or in many cases, eliminate) the price differential between Macs and Windows PCs by using more common and standardized parts such as IDE drives. The new Ultra 66 EIDE drives that Apple uses perform nearly as well as SCSI drives but cost much less. Use Apple's Drive Setup utility to format these drives and to check for bad blocks.

I'm trying to update my hard disk driver, but Apple Drive Setup or HD SC Setup says "drive selection failed" or "no suitable drive" or "unsupported drive."

Apple's formatting software is basic reliable software that works on every drive that Apple ships in their computers. Apple doesn't manufacture hard drives, so their drives physically look like other Seagate, Quantum and IBM (yes, really) brand hard drives, but

always with an Apple label on them and special code in the drive's ROM so Drive Setup can tell that they are Apple drives. There are so many types of drives out there that Apple only wants their setup software to work with drives it knows all about. (This mainly applies to SCSI drives—Drive Setup supports most non-Apple IDE drives, and versions above 1.4 support many non-Apple SCSI drives as well).

When we sell a drive at Tekserve that is not supported by Apple Drive Setup, we provide FWB's Hard Disk ToolKit PE, LaCie's Silverlining, or SoftRaid.

It's always a good idea to have a floppy, zip or CD-ROM disk with your drive's formatting software that will boot your computer (or that you can use along with a bootable CD-ROM) in case of trouble. Recent versions of FWB Hard Disk Toolkit come on a bootable CD. Apple Drive Setup is on the CD that comes with new Macs.

Should I partition my drives?

Maybe. Larger drives have larger minimum file sizes. Even if a file has just one word in it, the larger the drive's partition, the more space that tiny file will occupy. For instance, on a 250 MB drive, the smallest file will take up 4K. On a two-Gigabyte drive, the smallest file will take up 64K. Partitioning the drive reduces this minimum file size.

Apple's OS 8.1 (and up) allows you to reformat your drive with a new file system (Mac OS Extended Format, also called HFS plus) that solves the problem of wasted space on larger drives without partitioning. New Macs sold after August of 1998 come pre-formatted with Extended Format. You only need to partition for convenience or specialized applications, for instance to make a scratch disk for PhotoShop, a Video data partition for Final Cut Pro, or for images of CDs you will burn. In most other instances partitioning will not give you any performance advantage.

With Systems below 7.5, the largest partition the Mac can recognize fully is two gigabytes. System 7.5 can handle partitions up to four gigabytes. 7.6 goes higher. Unless you are dealing with large graphic, video or sound files, it is a good idea to partition any drive over two GB into several smaller partitions. Each one will show up on the Mac desktop as a separate disk icon.

Apple's old HD SC Setup software doesn't allow you to put multiple Mac partitions on drives, but Apple's newer Drive Setup can partition drives. Warning: changing partitions will wipe out all data on your drive, so make at least two backups first.

Mac OS Extended Format gotcha: Norton Utilities 3.51 and earlier don't recognize Mac OS Extended Format and will try to "fix" the drive, rendering it unusable. (Disk First Aid 8.2 or later, Symantec Tech Support or MicroMat's Tech Tool Pro 2 may help you recover from this). Norton Utilities 3.52 will recognize Mac OS Extended Format volumes and will basically ignore them. You should upgrade to Norton Utilities 5.04 or later, which properly recognizes and works with Extended Format volumes. (Note that Norton 4.x and above are only for PowerPC Macs, for 680X0 Macs you must stick with Norton 3.52).

What's defragmenting, and should I bother?

As files are written to your hard disk, they are usually put in the first empty space that is big enough for the whole file. If you open an old file, make some changes, and save it, it may not fit into its old space anymore, so the System automatically saves part in the old place and the rest in the next available empty space. When you open the file the next time, the System has to get those two "fragments" of the file and put them back together. Sometimes a file that you work on often can get fragmented into three or more pieces. As the number of fragmented files on your disk

increases, disk operations get slower. Defragmenting your drive puts all the pieces back together and speeds things up.

Defragmenting involves moving all or most of the files on your disk. You must backup before you defragment. You can use Norton's Speed Disk (part of Norton Utilities) to defragment your drive, but be sure that your Norton is up to date. Copying all of your files to another drive, erasing the first drive, and copying them back will also completely defragment them. But please have an extra backup before you do this! It doesn't hurt to defragment your drive every few months.

Printers

I chose my printer in the Chooser, and it forgot my choice.

The Chooser is counterintuitive, because you can use it to make several simultaneous choices (printer, network drives, etc.). As a result, it doesn't display what's chosen. Once you select a specific printer, it will remain chosen until you select a different printer (unless your backup battery is dead, see below). To confirm what printer is chosen, select "Page Setup" from the file menu—at the top of the window that's displayed you'll see the name of your printer.

Early Epson Stylus printer software can cause the printer choice to be forgotten—update to a more recent version.

To choose a different Laser printer (or other AppleTalk printer) click on the appropriate driver icon on the left side (such as "LaserWriter" or "LaserWriter 8"). Sometimes you have to scroll down to see the correct icon. The specific LaserWriter you have chosen will show up on the right side highlighted. If it's not highlighted, you need to click on the printer name on the right side to choose it. If you are using LaserWriter 8 or newer, there will be a little printer icon in front of the printer's name to show that you have already "Setup" for that printer. If not, after highlighting the printer click the "Setup" or "Create" button to select options for that printer. Then close the Chooser with the close box in the upper left corner.

If you have a LaserWriter IISC, choose "Personal LaserWriter SC" on the left side and don't look for anything in the right side of the Chooser (but this printer is not really compatible with System 8 and up). If you have a Personal LaserWriter LS, you can select "PLW 300". If you have a Hewlett Packard LaserJet, you will usually want to use "LaserWriter 8" on the left side and then highlight your printer on the right side.

When I try to print to my Epson printer, I get an error message that the printer is not responding. What's wrong?

When you turn on your Epson inkjet printer, it performs a self-test before it enters normal operation mode. If one of the components fails the startup test, the printer enters an error mode in which it will not respond to any commands from the computer. Normally it will indicate the error with a flashing light or error light. The first things to check are that the paper is properly seated in the sheet feeder, and that there is ink in the ink cartridge. When the printer is ready you should see a steady green light.

I just upgraded to the latest OS and I can't find my printer's icon in the Chooser. Where did the driver go?

If you own a LaserWriter Select 300, a Personal LaserWriter 300, or a Personal LaserWriter LS, don't sweat. Apple doesn't include the driver for these models with the OS because they have decided not to provide support for these machines. In other words, these printers do work with OS 8.6 and 9, but Apple doesn't guarantee that future versions of the OS will be compatible with the driver. You may download the driver for this printer from Apple's website. The driver is called "LaserWriter LS/300." But to use these

printers with a new Mac that lacks a serial port, read the USB question that follows.

If you own a LaserWriter Select 310, a LaserWriter II SC, or a Personal LaserWriter SC, the driver for your printer is completely incompatible with recent Mac OS. You must either downgrade your OS or replace the printer. The SC models are incompatible with anything beyond Mac OS 7.6.1. The Select 310 is incompatible with anything beyond OS 8.1.

If you have a StyleWriter 2200 or 2400, use the StyleWriter 2500 icon. If you have a StyleWriter, StyleWriter II or 1200, use the StyleWriter 1500 icon.

For most PostScript USB printers, such as the LexMark E310 or E312, you must install the manufacturer supplied "Printer Description File" and then use Apple's Desktop Printer Utility to create a desktop printer icon. Then you will be able to choose that printer in the Chooser (or simply highlight the icon on the desktop and select "Set Default Printer" from the Printer menu).

USB, Printers and Serial Devices, or Who Took the Serial Port?

Should I avoid new Macs because they lack regular serial ports?

No, the new Universal Serial Bus is faster and better. Using USB hubs, you can theoretically connect over 100 devices to a single USB port. And, because the USB port is a standard in the Windows world, there are more and more peripherals that you can use with your Mac (the vendor usually still has to write a special driver for the Mac, but they no longer have to make special hardware too).

What printers does Tekserve recommend for my new USB Mac?

Color Inkjets:

All current Epson Stylus printers numbered 740 and above have USB ports and come with Mac drivers. Epson has many choices from the Stylus 760 up to the faster Stylus 900, as well as six-color photo printers like the 870 and 1270. The brand new Epson Stylus Photo 2000P is the first to claim archival print quality equal to or better than traditional photographic prints. Only time will tell. The Epson 740 is the last Epson printer model with both serial and USB ports, so it can connect to both old and new Macs.

Hewlett-Packard has recently been coming on strong with good inkjets in the 900 and 1200 series. The 930 is a lower cost model, the 970 is faster and can print double-sided. If you want a network ready color inkjet, consider the Epson Stylus 900N. Most other Epsons can be networked with the Axis 1440 printer server or an internal Epson MultiProtocol card. Similarly, the Hewlett Packard inkjets can be networked using an HP print server.

Black & White Laser Printers:

The Lexmark Optra E312 is a good, inexpensive laser printer that connects to a single Mac via USB. The E312 has clone PostScript, which works fine for text and light graphics use.

If you have more than one Mac, you will want a networkable Ethernet printer. All recent Macs and most Power Macs have Ethernet, which will connect to the following printers (and you can network many Macs to one or more printers):

- Brother HL-1270N—low cost.
- LexMark M410N/M412N—reliable.
- HP LaserJet 2100 TN—pricey but good.
- HP LaserJet 4050 N or 4050 TN—robust. Ideal for an office with many people printing.

How do I connect my old Epson printer to my USB Mac?

The $39 Epson USB adapter supports the Stylus Color 440, 600, 640, 800, 850, 1520, Photo 700 and Stylus Color Photo EX.

How do I connect my StyleWriter I, II, 1200, 4100 or 4500 or LaserWriter Select 300 to my USB Mac?

Keyspan's USA-28X Twin Serial Adapter will connect these printers to any USB Macintosh. The Keyspan adapter also works with most HP DeskJets that have a serial connector. The adapter has two serial ports and may be used to connect a PalmPilot, a modem, or a digital camera at the same time, although it doesn't support most other serial devices. For an exact list of supported devices, go to Keyspan's web site: www.keyspan.com.

If you have older networked Macs, you can also share these printers for free. See "How do I share my printer?" at the end of this section.

How do I connect any serial or LocalTalk or MIDI device, or my serial LaserWriter LS, LW 300, Select 300 to a USB Mac?

Griffin's iPort can be installed inside a 233 MHz iMac (not compatible with 266 or faster iMacs). The iPort offers one serial port which will work with nearly all Mac serial devices and LocalTalk devices. The iPort must be installed inside the iMac by a technician.

Griffin's gPort or GeeThree's Stealth can be installed inside a Blue and White G3 and early PCI G4s. For later AGP G4s, a Griffin gPort4 or Stealth adapter does the same thing. The gPort or Stealth offers one normal serial port, which will work with nearly all Mac serial devices and LocalTalk devices. It must be installed in the internal modem slot by a technician. Unfortunately, if the G3 or G4 has an internal modem it has to be removed (but you can use an external USB modem instead).

If you have older networked Macs, you can also share these printers for free. See "How do I share my printer?" at the end of this section.

How do I connect my Color StyleWriter 1500, 2200, 2400 or 2500 to my USB Mac?

The Keyspan USA-28X Twin Serial Adapter can be used to connect these to a single computer. They may also be networked with Farallon's EtherMac iPrint SL to any Mac's Ethernet port. Once the printer is connected to the iPrint, it uses the same software driver that it used before and is accessible by all Macs on the same Ethernet network.

If you have older networked Macs, you can also share these printers for free. See "How do I share my printer?" at the end of this section.

How do I connect my LocalTalk printer to my USB Mac? Printers like the LaserWriter IINT, NTX, F, Personal LaserWriter NT, NTR, 320, LaserWriter Pro 600, 4/600 PS, Select 360, Color StyleWriter 6500 or an HP Laserjet with "M" or "MP" in it's name?

To connect these printers to a new Mac, you must use an Ethernet to LocalTalk Bridge:

1. The AsanteTalk Ethernet to LocalTalk Bridge includes everything you need to connect a LocalTalk printer to a new Mac. It works with existing drivers.
2. If the printer is already connected to a LocalTalk network, you can use Farallon's iPrint LT. The iPrint LT is similar to the AsanteTalk, except that it has a PhoneNet jack instead of a LocalTalk Din 8 jack. If your existing LocalTalk network has more than eight LocalTalk devices on it, you will need a much more expensive bridge. It might be time to upgrade to Ethernet.

How Do I connect my PC parallel port printer to a USB Mac?

Most PC printers can be connected to a USB Mac, using Infowave's "PowerPrint USB-to-Parallel" adapter and software. One exception is the HP DeskJet 700 series.

How do I connect my LaserWriter IISC or Personal LaserWriter SC to a USB Mac?

Sorry, you need to buy a new printer.

How do I share my StyleWriter, Personal LaserWriter LS, 300 or Select 300 printer?

Printer Sharing is an inexpensive way to connect an older printer to a network. The

disadvantage is that the printer must be permanently connected to another Mac with a serial port, the serial Mac must be networked (via Ethernet) to the new Mac(s), and the serial Mac must be turned on all the time. Also, the serial Mac will slow down whatever else it is doing while it is printing a job.

1. Connect a serial Mac to the printer.
2. Connect the serial Mac to the new Mac via an Ethernet crossover cable, or through an Ethernet network.
3. On the older Mac, go to the Chooser and select the printer's driver.
4. On the right side of the Chooser window select the serial port to which the printer is connected.
5. Click the "Setup" button.
6. Click the check box next to "Share this printer".
7. Click the name box and give the printer a name. Give the printer a password if desired.
8. Click "OK" to close the setup dialog box.
9. Open the Chooser on the USB Mac.
10. Select the icon for the printer.
11. On the right side of the Chooser window under "Connect to:" you should see an item called "Shared Printer." Click on it.
12. Close the Chooser window.

You can now print from the new Mac. Steps 9-12 may be repeated on several networked Macs.

The printer will only be accessible to Macs on the network when the older Mac to which the printer is connected is turned on.

How do I share my inkjet printer without buying an Ethernet print server?

Epson printers may be shared to newer Macs much in the same way as Apple printers, except that the feature isn't included in Epson's software. The software necessary is a shareware extension called EpsonShare, which may be downloaded from the Internet at www.epsonshare.com. The shareware fee varies based on how many Macs are connected, but you can try before you buy. Apple's new (and free) USB Printer Sharing software is available from their web site and offers similar functionality.

How do I connect a PalmPilot to my USB Mac?

If your Palm has infrared and you have an iRDA equipped PowerBook or an original 233 MHz iMac, use infrared. The instructions and files you need are in the "iRDA" folder in the "Extras" folder on the MacPac CD. Palm is expected to ship a USB cradle real soon, but you can also use the original Palm Cradle (or Palm V travel kit) with a Keyspan PDA Adapter or Keyspan Serial Port adapter.

SCSI (Small Computer System Interface)

Is it true that the newest G3s and all G4s have no SCSI?

Recent Mac minitowers such as the Blue & White G3s and the Graphite G4s do not have SCSI on the motherboard, but some models may ship with an Ultra2 SCSI drive and PCI card already installed. You (or we) can also add a PCI SCSI card to any of these models.

I got a new CPU with an Ultra2 SCSI card. What adapter do I use to connect my regular narrow scanner and Jaz drive?

It's preferable not to connect regular narrow SCSI devices to an Ultra2 SCSI bus. The SCSI card will switch to a low speed compatibility mode, slowing down the hard drive too, and you may have problems with proper termination and cable length. If you need to use regular narrow SCSI devices, add a narrow PCI SCSI card such as the Adaptec 2930U. We stock and install a wide variety of SCSI cards at Tekserve. If you don't mind the reduced performance caused by mixing devices, be sure to use a special adapter or cable that includes "high-bit termination" or

you may have data reliability problems. Another option is the Adaptec 29160N PCI card, which provides wide Ultra2 internal SCSI connectors for fast internal SCSI drives, but has a narrow fifty pin external connector perfect for Jaz drives and scanners.

I added an Adaptec 2906 SCSI card to my Blue & White G3 or G4. Why can't I boot from my external Zip or Jaz drive?

The AVA-2906 card is not bootable (it's not even recognized unless its extension loads). Boot from a CD or trade up to a bootable SCSI card like the AHA-2930U.

I just added a new hard drive/scanner/optical drive to my SCSI chain, and the computer won't boot at all, or if it does I don't see the new drive.

SCSI has some seemingly simple rules:

1 Each device must have a unique ID between 0 and 7 (on wide SCSI buses, between 0 and 15). The Mac itself (or the SCSI card) is always 7, if the Mac uses SCSI drives, the internal hard drive is usually 0, and the internal CD-ROM is usually 3 (Recent Macs use IDE drives instead of SCSI). A second internal hard drive or the hard drive in a Duo Dock is usually ID 1. So external devices should normally use the numbers 2, 4, 5 & 6. The order of devices doesn't have to match the ID numbers. Before adding any devices, use the free SCSI Probe control panel to quickly identify all the devices in your chain and their ID numbers. Some Macs have two or more SCSI buses, in which case SCSI Probe will have a pop-up menu to choose them. Be sure to use the latest SCSI Probe, 5.1.2 as of this writing.
2 Always make sure all devices, including the Mac, are turned off before connecting or disconnecting anything on the chain. Failure to do so can result in serious damage to your Mac's logic board and any other SCSI device.
3 All devices in the SCSI chain should be turned on before you turn on the Mac, and all devices should only be turned off after you shut down the Mac.
4 There must be one terminator at each end of the chain. Normally the hard drive inside the Mac (or on the 900/950 and a few others, the hard drive cable) is terminated, so that's one end. The only other terminator should be on the very last device on the chain. For long chains with many devices it is sometimes necessary to break the rules and put a third terminator in the middle. A $59 voodoo marketing terminator is in most cases no better than a $29 active terminator. Both are much better than a $12 passive terminator. We suggest that you always use an active terminator.
5 SCSI cable quality matters. There are rules about where certain pairs should be within the cable, how the wires should be twisted, and so forth. Apple, APS, Granite and Tekserve SCSI cables meet these rules. Many other cables, particularly older ones, don't.
6 The entire SCSI chain, including the computer, should be no more than 10 feet long (although some people get away with up to 18 feet). Each device has up to a foot of cable within it, and that counts. Use the shortest cables that are practical. Avoid the six-foot cables if you can. If you have an Ultra-Wide SCSI chain, all cables together should total less than five feet. If you have an Ultra2 LVD or Ultra 160 LVD chain and all your devices are LVD, you can use very long cables (up to 40 feet), but be certain that all your cables (and your terminator) are specified for Ultra2/Ultra160 LVD.

If you've followed all the rules above, verified your connections and terminator, used SCSI Probe to check IDs (sometimes the switch on the drive is mislabeled), and it still doesn't work, you're in SCSI voodoo land. First

try connecting only the new device directly to the Mac to be sure that both are okay. Then try anything—swap the location of two devices, swap two SCSI cables, use a longer or shorter cable, swap the two SCSI ports on the back of the drive, replace the passive terminator on the end with an active terminator, add an active terminator in the middle of the chain, and so on. A few Power Macs have a bug that can cause trouble with SCSI ID 5; System 7.5.3 and above fix that problem.

What's SCSI-2, Fast SCSI and Ultra2 SCSI?

SCSI-2 is a protocol for communications, but it also refers to a type of high-density 50-pin connector (HD50) sometimes used instead of the more common "Centronics" 50-pin connector. Jaz drives use HD50 connectors. We stock HD50 cables at Tekserve, including PowerBook to HD50 cables.

SCSI-2 "Fast" means that the drive supports new software protocols that allow it to work faster with computers (such as AV Macs and Power Macs) that also support the new standard. All currently manufactured SCSI drives are "Fast" or "Ultra" or better. Apple's SCSI Manager 4.3 extension that comes with System 7.5 gives many older Macs some of these SCSI-2 features (and can sometimes introduce new problems on older Macs). In System 7.5.3 and up, this extension is built-in to the System file.

Wide SCSI means that the data bus is 16 bits wide instead of 8 bits wide. Twice as wide should move twice as much data in the same time. Wide drives are recommended for audio and video applications. You must add a wide SCSI card to your Mac in order to take advantage of a wide drive. Wide drives use high-density 68-pin connectors. Nearly all presently manufactured SCSI drives are wide, because cheaper Ultra-66 EIDE drives now perform nearly as well as narrow SCSI drives.

SCSI differential means that each data signal is on a balanced pair of wires, one going negative when the other goes positive. This increases immunity to interference and allows very long SCSI cables (up to 50 feet), but requires special drives and special cards.

Ultra2 LVD SCSI (not to be confused with Ultra SCSI-2) is a recent standard, and it uses new wide LVD (low-voltage differential) SCSI cards, drives and cables. Again, the differential part means that you can have very long SCSI chains. Most Ultra2 SCSI drives automatically switch to Ultra SCSI single-ended (SE) mode if you connect them to a regular wide SCSI bus at a small speed penalty (and with much shorter cable lengths). Although LVD uses standard 68-pin wide SCSI connectors, it requires different terminators and special cables built to more rigid standards. Some Ultra2 SCSI cards will have smaller "VHDCI" connectors. We recommend using multi-mode LVD/SE terminators to be safe. We thought that Ultra3 SCSI was next, but instead most companies call it Ultra160 SCSI, because it allows data to move at up to 160 MB/s (twice the speed of Ultra2).

Ultra160 LVD SCSI uses the same cables and terminator as Ultra2 LVD SCSI, and you can mix Ultra2 and Ultra 160 devices with no speed penalty (of course the SCSI controller card must be Ultra160 to gain any speed advantage from an Ultra160 drive). You guessed it, Ultra 320 SCSI is currently in development. But remember that a single SCSI drive is unlikely to transfer data faster than 20-30 MB/s, so all these speedy standards only help when you have an array of multiple drives (RAID) with the data striped across them.

FireWire

If FireWire runs at 400 Mb/s, is it even faster than Ultra160 SCSI running at 160 MB/s?

No. Did you notice that Ultra160 SCSI has a capital "B" (as in MB/s) and FireWire has a

small "b" (as in Mb/s)? Ultra160 SCSI runs at 160 MegaBytes per second. A Byte is 8 bits. FireWire runs at 400 Megabits per second. To convert from bits to Bytes you divide by 8, so FireWire is only 50 MB/s. Still darn fast, and much simpler to configure. (Yes, you figured it out—12 Mb/s USB could also be called 1.5 MB/s USB.)

Why do people say that FireWire drives aren't "native" FireWire?

Hard drives have interface cards on them to talk to the outside world. Most drives have EIDE interfaces. Some drives have SCSI or Fibre Channel interfaces. None of the drive manufacturer's has shipped a drive with a FireWire interface yet. All the FireWire drives that are currently being sold are EIDE drives with a special EIDE to FireWire adapter in the box. If they ever make native FireWire drives, performance may improve further.

Can I use FireWire to network two Macs, or to share a hard drive between them?

One vendor is shipping a product to allow this, but we suggest using Ethernet for networking. You can't share a regular FireWire drive between two Macs simultaneously. You can unplug a FireWire drive from one Mac and plug it into another without turning anything off (but you'll need to close any open files and dismount the drive by dragging its icon to the trash or using the Put Away command before you unplug it). MicroNet is shipping a product called SanCube that does support multiple computers connected to and reading from a FireWire hard disk array, although only one computer can have write access to a given volume at one time.

Can I really have 127 hard drives on a FireWire bus?

Well, that's the theory, and maybe you can have 127 devices, but as of Apple's FireWire version 2.4 you are limited to somewhere between six and eleven individual hard drives connected to a single CPU by FireWire. Pretty darn good, but we've already seen customers bump into this limit (solved with that old standby, a SCSI disk array). A FireWire hub is NOT a workaround. Now that FireWire hard drives are available up to 75GB in a single drive, or 230 GB in an array, this isn't too big a problem.

Do I need special software or extensions to use FireWire devices?

For most devices you do, but the required software will ship with the device.

Bombs and Crashes

My computer bombs whenever I launch my MajorSoft WordMangler program.

If your problems only occur with one particular program or action, and are fairly repeatable, they should be easy to fix.

1. Try giving the program more memory. Be sure the program is not running, then, click once on the icon of the program and press -I (Get Info). On newer systems then choose "Show: Memory" from the pop-up list. Increase the "preferred" memory size by 25-100% and try the program again.
2. Try starting without extensions. The vendor will tell you to do this, so try it first. Under System 7 and up, just hold down the shift key while the Mac starts up. It should say "Welcome to Macintosh (or Mac OS), Extensions disabled." If you are running System 6, you must manually remove System Extensions and Control Panels from the System Folder by dragging them to another folder—holding down shift won't do it. If the problem is gone, see the next major question below.
3. Quit the program, delete any preferences files used by the program (if they are complicated preferences, copy them to another folder or a floppy disk in case they prove not to be the problem and you want

to restore them). The preferences file is usually in the Preferences folder in the System Folder, but it could be somewhere else, such as in the folder with the program (or in the "Claris" or "Aldus" or "your software brand name here" folder). Then reinstall the program from the original floppy disks.

4 Many problems can be traced to corrupted, damaged or compressed fonts. Under System 7.1 or greater, remove the Fonts Folder from your System Folder (if you are using Suitcase, ATM Deluxe or MasterJuggler, also use it to close all your fonts), restart the computer, and see if the problem is solved. If so, you need to work your way through your fonts and see which one is the culprit. A corrupted ATM cache file or ATM database can also cause grief, you can safely delete them.

5 If it's Office 98 (Word, Excel or PowerPoint) that's giving grief or complaining about DLLs or Visual Basic, delete the "Office Registration Cache" and "PPC Registration Database" preference files.

6 If these steps don't solve the problem, contact the company that publishes the program. Many vendors offer good free tech support, and sometimes you will have a standard problem that they can quickly identify and tell you how to fix. Many vendors also have support forums online. This is especially useful for those vendors that charge for telephone tech support, as their online support is still free. You also get the benefit of the input from other users, who may have encountered the same problems and have workarounds you can use until the vendor fixes the bug. Some companies also have decent support on their web site.

All my icons are generic with folded corners. Where are all the regular icons?

Your hidden "Desktop" files are damaged or corrupted. See the next question.

I double-clicked on a file and the computer said, "the application that created it cannot be found." Will rebuilding the desktop help?

The invisible "Desktop" file(s) keep track of which applications are used to open which files. If that gets corrupted, these problems occur, and the answer is to rebuild the desktop. Restart your computer and press -option. When you see a message saying "Are you sure you want to rebuild the desktop," click yes.

Of course, some files aren't meant to be opened directly and should give that error message. And sometimes you really don't have the required application. The shareware GraphicConverter program is a gem—it can open, edit, print, and save graphics files in any of more than a dozen formats and only costs $35. MacLink Plus is the top general-purpose translator program and supports many text, word processing, spreadsheet and database file types.

My computer bombs when I turn it on.

Many bombs can be traced to extensions and control panels that modify system behavior (and sometimes each other's behavior). Under System 7 and up, holding down the shift key while booting will disable all of them. If that solves the problem, use Extensions Manager to disable specific control panels and extensions. The usual suggestion is to try turning off half your extensions, and if the problem doesn't go away try the other half. When you find the half that cause the problem, disable half of those, and so on until you isolate the problem.

There are commercial programs like Conflict Catcher that automate extension troubleshooting.

If disabling extensions doesn't solve the problem, it may be a hardware or a System problem. Try booting from a System install or Restore CD. If that solves things, try a clean System install.

The System

What's the big deal about the System Folder?

System software is what makes your Mac smile when you turn it on, allows it to run, read and write hard drives, copy files, run other programs, and all sorts of other goodies. The Finder is part of the System software and is usually the program that runs first when the computer starts up. The System software lives in a folder that is usually named "System Folder" and which contains the critical files "System" and "Finder" as well as many related files. In System 7 and above, these related files are mostly in folders in the System Folder, such as "Extensions," "Control Panels," "Preferences" and with System 7.1 and up, "Fonts."

If everyone just used the System Folder the way it comes from Apple, there would be many fewer crashes, bombs and conflicts. But many programs add files or even folders to the System Folder, and most of us have added various system enhancements ("screen savers" that are really eyewash, anti-virus programs, security programs, font management programs such as Suitcase, FileSaver and so on).

When your system is operating flawlessly, make a backup of your System Folder. You can do this with a backup program, or by copying the System Folder to another disk or removable media, or by using Apple Disk Copy to save a "disk image" of the entire System Folder.

What's a clean System install and how do I do it?

As a System Folder grows top heavy with extra stuff, your System can become less stable. Sometimes parts of the System files get damaged or corrupted and you don't know exactly which ones are damaged. Many times Apple, software vendors, or Tekserve will insist that any problem you are having with your computer is due to all the junk in your System Folder, and will suggest that you do "a clean System install." That means making a brand new System Folder just like Apple would put on a new computer. This new folder will be lacking all your added fonts, custom doodads and preferences, including your Internet access setup, so after you solve your problem you'll need to "dirty" the new System Folder again and hope that your problem stays gone (which is why some people first try a much simpler dirty install, which basically means deleting only your Finder, System and Finder Prefs file and then running the System installer).

With Recent G3s and G4s, you can boot from your Apple System Restore CD and either replace just the System Folder, "restore in place" which will leave most of your Applications and user files and documents alone, or restore the drive to the condition it shipped from Apple, erasing all of your files and everything. Note that as with a clean install, all of these options will delete your Internet access settings and some or all of your program and other preferences.

If you don't have a Restore CD or are using a newer system than the one that shipped with your computer, follow these choices:

1. System 7.6 and up, use the "options" button in the main installer window to bring up the choice of a clean install. With System 7.5, when you get to the install dialog, press -shift-K, and in the box that comes up click "clean System install." Your old System Folder will be renamed "Previous System Folder" and the new one will be called just "System Folder."
2. With Systems below 7.5 (or above if your System file is damaged), it is a little more complicated. We suggest that you take the Finder out of your System Folder (put it on the desktop) and then rename the System Folder "Old System Folder." Then restart

your computer. You should get a blinking disk or question mark icon, because there is no System Folder on the disk. If it starts up anyway, you have an extra System Folder on your disk, and you need to find it (use the Find command and look for "Finder"—any folder with a System and a Finder in it is a System Folder, no matter what the folder is actually named). You need to "unbless" that folder too by moving the Finder somewhere else, like into the Trash. Restart again to be sure all System Folders are gone. Remember that you want it to fail to boot, to prove that you have eliminated all old System Folders.

3 Now restart the computer with the System Install CD that came with your Mac or the Install Me First disk from your System software, and do an "Easy Install." The System 7.5.3 and later upgrade CD-ROMs are bootable, but the earlier System 7.5 upgrade CD-ROMs are not bootable—they came with a bootable floppy disk with the CD-ROM software on it, so you insert that floppy, boot from it, and then insert the CD-ROM and run the installer.

4 Now restart to see if your problem is solved: If everything is okay, you can start dirtying your new System with all your old fonts, preferences, control panels and extensions. It is always better to reinstall stuff like fax software from the original floppy disks rather than using the old versions. However, you will want to move over any fax folders and preferences, which contain your address books, old faxes and so on. You'll also want to move folders such as "Claris" and "Aldus" that various programs may have placed in your System Folder.

We suggest doing this very slowly—move a few items, restart and see if things are okay, move a few more, and so on. This is a great time to do housecleaning—anything you don't need or don't recognize can be moved into a holding folder until you are sure you don't need it. The point is that anything that was freshly installed by the System install should not be replaced—only move unique stuff that you know you need from the old System Folder to the new one. Remember that less is more. More speed, more reliability, more peace of mind.

You can automate the clean install process with Conflict Catcher if you like.

What System should I use on older Macs?

If you have a PowerPC with a 233 MHz or faster processor and at least 64 MBs of RAM, we suggest that you use Mac OS 8.6 (with less RAM or a slower processor, use System 8.1). With any G3 or any G4, use Mac OS 9.04. Both of these Systems are more stable and reliable than previous systems. Remember, this is current as of July 2000—OS X sounds real cool, and we are already trying out beta versions, but we don't intend to upgrade all our computers the day it's released.

On older Macs, if your system is stable and happy and you don't need any new features, stick with it.

I have an old 68040 Mac—should I upgrade to System 7.6 or OS 8?

Newer system software will use more RAM and will operate more slowly, but may enable you to use newer programs. It's your call. Note that 8.1 is the last System release that supports 680X0 (non-Power PC) Macs.

Any problems upgrading to OS 9?

Mac OS 9 does have a few compatibility issues, but the good news is that most applications that work with Mac OS 9 are expected to work with Mac OS X as well (not true for extensions and some control panels, which may not be compatible with OS X). Note that working with OS X doesn't mean optimized for OS X—you will have lots of opportunity to buy updates.

OS 9 does require an update to Adobe Type Manager, and the 4.52 update is free on Adobe's web site (or get ATM Lite 4.6 in the same place). You will also need to update software for Global Village PC Card modems, and updates for Virex and Norton Utilities are required. Other things that need updates are Suitcase, Visioneer PaperPort, Office, Word and Excel 98, many HP inkjets, Tech Tool Pro, Conflict Catcher, SoftRaid, and AppleWorks. Sadly, LaserWriters with built-in PostScript fax modems are no longer supported.

Memory

What speed memory do I need for my particular Mac, and how much can I add? Should I add it in pairs?

This has become so complicated that we suggest you call us or use one of the references online (Apple's Memory Guide or NewerTech's "GURU"). Before calling, please check your exact Macintosh model and also write down the memory information shown in "About this Macintosh" or "About this Computer" under the Apple menu.

My Mac has oodles of RAM installed, but one program gives me "out of memory" error messages. What's wrong?

See the next question and answer.

I get "out of memory" errors in a certain program, even though I just added more memory to my computer. How do I get the program to know about the extra memory?

When you launch a program, it asks the system only for the amount of RAM set as its "Preferred Size." You need to set the program in question to ask for more RAM. To do this, quit the program, and highlight the program icon. Then select "Get Info" from the File menu or type -I. At the bottom of the Info window you should see a section called "Memory Requirements." (With OS 8.5 and up, select "Show: Memory" from the pop up first.) Then increase the "Preferred Size" by 50 or 100%. If it says 4096, try 8000 (or 8192 if you like base2).

Before increasing a program's preferred memory setting, it's a good idea to check "About this Mac" or "About this Computer" under the Apple menu in the Finder to check how much "built-in" memory you have. This will also show you how much memory is being used by the OS and other programs that are running. Don't set a single program to use more memory than is available. If you want to be able to run several programs at one time, be sure that the preferred memory of all the programs you will run simultaneously, plus the memory used by Mac OS, is less than the total built-in memory.

What's the cache (or disk cache) in the memory control panel and how big should it be?

The computer uses a little bit of memory to save things it guesses you will soon need to get from the hard drive. It's faster to get it from memory than from the hard drive. With System 7.5.3 and up click the "Use Defaults" button in the memory control panel and let Apple set the cache size (that may also turn on virtual memory, which you may want to turn back off). With System 7.5 and down, Set the cache to 128K or 256K and leave it alone.

What's virtual memory and how much should I have?

Virtual memory uses some clever programming and some hard drive space to simulate more RAM than you really have. Its main virtue is that it's free, and that PowerPC programs load a little faster and require a little less memory when virtual memory is on. The downside is that it's slower than real RAM, uses up hard drive space and shortens battery run time on PowerBooks. We prefer adding real RAM and turning off virtual memory. However, if you need to have three or

four programs open at once so you can jump between them, virtual memory is okay. You'll get no benefit if you try to use virtual memory to give one program more RAM than you actually have physically installed, and your computer will slow dramatically. PhotoShop and Final Cut Pro are usually faster and happier with virtual memory turned off.

With Mac OS 8.1 and higher, Apple recommends always leaving Virtual Memory on, but you might want to try it both ways and decide for yourself.

What about RamDoubler from Connectix?

We think its time has passed.

My PowerBook 190, 5300 or 3400 sometimes loses the extra memory I installed.

In these PowerBooks it is possible for the memory module to come loose. When we install RAM at Tekserve we install a thin strip of foam to hold it in place. Apple has official foam strips for this purpose and instructs that they be put on the back of the keyboard. Be certain that you don't have foam on both the keyboard and the RAM.

Viruses

I think I have a virus. What should I do?

Buy the latest version of Virex (our favorite, although they were slow to come out with the 6.1 upgrade needed for Mac OS 9 compatibility) or Norton AntiVirus for Macintosh. But don't stop there—the virus definitions that come with the product are probably already out of date. You must get the latest update for the program you bought (updates are released online every month, new shrink-wrapped boxes are usually many months old). Install the program, update it, and run it. Disinfectant, our former recommendation, is no longer being updated and it will miss some new viruses.

PowerBook Specific Items

Should I get AppleCare for my PowerBook?

PowerBooks are manufactured to closer tolerances, get rougher handling than desktop computers and are expensive to fix. We think that Apple's own extended warranty program, called AppleCare, is usually a good investment for PowerBooks, although Apple has also noticed that, and the cost of an extra two year's of coverage has risen to $349 plus tax. Of course Apple is betting that you won't need it and that they'll come out ahead, but many of us would rather spend $349 on insurance to avoid the chance of a $500 or $1,000 repair. AppleCare doesn't cover broken plastic or physical damage from dropping or abuse, or service outside North America. AppleCare can only be purchased before your original warranty expires, and it cannot be renewed.

At Tekserve we sell AppleCare at a discount. As of this writing, Tekserve and many other Apple Authorized Service Providers throughout the USA can perform local (sometimes while you wait) warranty and AppleCare repairs on nearly all PowerBooks. However, we can't guarantee that will always be true—Apple has recently determined that fixing PowerBooks at a single national mail-in depot is cheaper for them, and they could require mail-in service at some point. iBook service is already limited to the mail-in depot.

Does a battery drain when not in use? Are new batteries fully charged?

All batteries have some "self-discharge," usually 1% to 3% per day. That means that the battery will be dead in a month or two sitting on the shelf and will need a full charge. Brand new batteries are always shipped without much charge, and must be charged before use. The PowerBook 500 series uses "intelligent" batteries that can get dumb if left uncharged

for more than a month. This means that even if you don't use your PowerBook at all, you should plug it in for at least 24 hours every week so the batteries can charge. It's okay to leave your PowerBook plugged in all the time.

Is it okay to run my PowerBook without a battery?

If you have to, but it's not recommended. PowerBooks have an internal rechargeable backup battery that saves your PRAM settings (printer, AppleTalk, clock, etc.). If you leave a PowerBook unplugged for a week or two without a regular battery installed, that internal battery will be depleted, your settings will be lost, and you may have trouble booting the computer. The regular battery also acts as a ballast, maintaining smooth voltages to run your PowerBook.

The first G3 Series PowerBooks were designed to run on AC power without any battery, so you can have a CD-ROM and a floppy drive (or zip) installed at the same time. We've already seen several customers who grabbed their battery-less G3 PowerBook and wondered why it didn't work on the airplane, so if you usually run with two drives and no battery, don't forget the battery when you unplug. iBooks are designed to always have a battery in them.

What's resetting the Power Manager, when should I do it, and how?

The Power Manager is software in the PowerBook that works to maximize battery life. It stores some special information for itself in the PRAM, and if that information gets corrupted you may have trouble running on batteries. When you have battery problems it's frequently a real problem with the battery or the computer, but sometimes it's just a software problem with the Power Manager. Here's how to reset the Power Manager on different PowerBooks:

PowerBook 100: Flip the battery switch on the back down, and then hold down both the reset and interrupt buttons (on the left side) for 15 seconds.

PowerBook 140-180c (except 150): Unplug the AC Adapter, take out the battery and leave it alone unplugged for 5 minutes. That's probably all you need for the 160-180c. On the 140, 145 and 170 (and just to be sure on the 160-180c), then use two paper clips (or one paper clip bent into a U shape) to hold in both the interrupt and reset buttons on the back for 10 seconds.

PowerBook 150: Disconnect AC adapter, remove battery, use a paper clip to press the recessed reset button on the back for 10 seconds. Then attach the AC adapter and press that recessed reset button momentarily—you will hear a small pop from the speaker. Now use the regular power button to turn on the unit. Insert the battery and charge it for at least 8 hours before trying to run on battery alone.

PowerBook Duo 200 Series: Remove power and battery, then press and hold the power/reset button on the back for 45 seconds.

PowerBook 500 Series: Press -Option-Control-Power On all at once. If the computer is on it will go off (losing all unsaved work). If the computer is off you won't notice anything, but you have still reset the Power Manager.

PowerBook 190, 1400, 2300, 2400, 3400, G3 and 5300: Shut down the PowerBook (Shut Down, not restart). Then turn on the PowerBook and immediately press - Option-P-R. The Mac should chime once, the screen will go dark, and the green sleep light will be on steady. Now press the reset button on the rear. You may then need to use the regular Power-on button to turn the machine on.

Original G3 Series PowerBooks: If the PowerBook is on, turn it off. Then use the key combo (shift-fn-ctrl-power-on) that is printed on the back of the machine. Wait at least five seconds, then press the power button to restart.

G3 Series PowerBooks with Bronze Keyboard: If the PowerBook is on, turn it off. Unplug the AC adapter from the PowerBook. Then press the reset button on the rear of the computer (find it between the video and modem jacks). Wait at least five seconds, then reconnect the AC adapter and press the power button to restart.

Note: on the iBook and PowerBook FireWire, resetting the PRAM will also change the date and time setting of the computer, so you should check that after any PRAM reset.

What's with the PowerBook 190 and 5300? Are they reliable? The plastic housing at the bottom of my display just broke, and I know I didn't drop it or anything.

Apple discovered some design problems (we hear that they were sold a bad batch of plastic by an American conglomerate) in these models, and they have a free Repair Extension program to fix them. The problems covered include failure of the plastic housing, loose or inoperative DC power connector, system hanging when using high-power PC cards, and with 5300s only, problems dropping off of AppleTalk networks or with slower boot times when running on AC compared to booting on battery. If you have any of these problems, please backup your computer and then bring it in so that we can send it to Apple for service. PowerBooks already repaired under this program have an "AA" sticker at the end of the serial number and a date stamp on the top and bottom foil inside the battery compartment. The repair program lasts for seven years from date of purchase, so it will be expiring soon.

Communications & the Internet

How do I save my Internet settings or switch among different service providers?

Apple's TCP/IP and PPP control panels both have a "Configurations…" item under the file menu. Once you have your Internet stuff set up, go to each of these control panels and export your current settings. You can also name and save configurations for several different Internet setups (one at home, one at the office, one on the road) and use the Configurations menu, control strip, or Apple's Location Manager to easily switch among them.

Is DSL or a Cable modem safe?

With DSL and cable modems, your computer is usually always connected to the net. Particularly if you have a "fixed IP address" it becomes easier to hack into your computer. And with cable modems, other users in your neighborhood may be able to access your shared files or networked printers. (Look in your Chooser and Network browser and check if you see anything that isn't in your own house.) You should turn off file sharing and web sharing or at least set serious passwords. Depending on the importance and secrecy of your files, you may want to get a hardware or software firewall. An Airport base station can provide some firewall functions such as assigning random IP addresses, network address translation (NAT), etc.

Why did my MacTCP control panel disappear or become invisible?

When Open Transport is active, the Network and MacTCP control panels are disabled and made invisible. You use the TCP/IP and AppleTalk control panels instead. You may be able to use the "Network Software Selector" to switch to "Classic" networking, in which case those are hidden and the others revealed. We prefer Open Transport, and it's the only choice if you are running System 7.6 or later.

Other Questions

How do I clean my screen?

Never spray anything onto the screen.

Spray a little Windex onto a lint free cloth and use it to wipe the screen clean. Don't drip Windex down into the screen bezel. Don't use scratchy paper towels. My partner Dick thinks that "Kleer Screen" is the greatest, so we sell it. Apple and Sony both recommend it too.

The clock on my computer keeps going back to 1904, or 1956 or something.

This means that the backup battery on your computer's logic board needs replacement. We stock the batteries. In most flat-shaped Macs it is pretty easy to do it yourself, in the Classic and IIci/cx and tower Macs you should let a professional do it. If we sell you a battery we install it for free. On a PowerBook, your internal PRAM battery may be dead, leave the PowerBook plugged in for two or three days to recharge it. After four or five years a PowerBook may need its internal PRAM battery replaced by a technician. On both the iBook and PowerBook FireWire, some serious crashes can cause the clock to reset. The crashing may be a sign of a problem, but the clock changing is normal.

Why can't I eject this disk or CD-ROM?

The CD-ROM eject button on the front of newer Macs only works to open the tray when there is no CD-ROM in it. If there is already a CD in the drive, you eject it by dragging the CD icon to the trash or highlighting it and selecting put away (-Y) from the File menu. If the computer is shared or the CD was already inserted when File Sharing was enabled, and you are running a System before 7.5.1, you won't be able to eject it unless you turn off file sharing.

Why can't I rename this disk?

If file sharing is enabled you won't be able to rename disks. Turn off file sharing. If that doesn't solve it, run Apple's Disk First Aid.

I got an error-XXX. What does it mean?

Frequently your Mac has gone through so many gyrations before it put up the error message that it may not be helpful at all. But the shareware "System Errors" or "Apple Error Codes" desk accessories can help answer the question. For instance, –34 means your disk is full. Bus Error and Type 11 errors can be almost anything.

How do I save a file on a disk that a Windows computer can read, or read a Windows disk on the Mac?

Mac OS 8.5 and up have the File Exchange control panel (called PC Exchange in System 7.5 to 8.1). This allows the Finder to recognize and mount (and even format) DOS and Windows disks. For full compatibility, it's best to format interchange disks as PC disks on the Mac rather than on a PC.

With System 7.1 and down, the Apple File Exchange program is included and will let you copy files to and from DOS floppy disks.

To actually use Mac files on a PC, or PC files on a Mac, you need a compatible application (like similar Mac and PC versions of WordPerfect or Excel) or else a file translator. Many Claris and Microsoft programs come with limited built-in translators, but MacLink Plus is a good universal translator. Microsoft Office 98 on the Mac is file compatible with Microsoft Office 97 for Windows. MicroSoft Office 2000 is now available on the Windows side, with hundreds of complicated new features you don't need, but it opens Mac Office 98 files without problem, and Office 98 can open Office 2000 files (although you may lose a few new-in-Office-2000 features in a document).

I have a Wintel machine. What's Tekserve's equivalent on the dark side?

For the last ten years we've asked people to let us know when they find a good service shop for Windows machines. We haven't gotten any enthusiastic responses. If you find a great place to service Wintel stuff, please let us know.

What's Tekserve's music on hold?

Dave Grier's "Lone Soldier", Rounder Records CD 0309.

File Sharing

How do I use file sharing to transfer files from my PowerBook (or roommate's computer) to mine, and back again?

First, network the two Macs together:

- Recent Macs—use an Ethernet network, hub, or simply an Ethernet crossover cable.
- Older Macs, the easiest way is with a standard printer cable (Apple's M0197) between the printer port on each Mac. That's the same cable you use to connect a StyleWriter printer. (Unless you are using Open Transport you can't use the modem port for AppleTalk.) Other methods are with PhoneNet or ModuNet (the same cables you use to share a printer among several Macs).

Now you have to "share" one computer so that other computer(s) on the network can see it. A shared computer is also sometimes called a personal file server. Although there are many steps, you only have to do them once.

To share your computer:

1 In the Chooser (under the Apple menu), turn on AppleTalk. (You also may need to set AppleTalk to the Printer port or to Ethernet in either the AppleTalk control panel or the Network control panel).
2 In Control Panels (under the Apple menu or in the System Folder), double-click on File Sharing (in OS 7.61 and down, it's called Sharing Setup). If you haven't entered an owner name, password, and Mac name, do so now. My owner name is David, my Mac's name is "David's G3." Let's say my password is "Backupmoreoften". If you are on a corporate or school network or using a cable modem, be sure to use a serious password, not "pass" or "please" or "chocolate."
3 Under file sharing, press the Start button. If it says Stop, then file sharing is already on, so leave it alone. Close the File Sharing window by clicking in the close box. Don't worry about Program Linking — you can leave it off.
4 Now you have to decide who can access your Mac. If you never connect to a network outside your home, it's easiest to open the Users and Groups control panel, double-click on Guest and click on "Allow guests to connect." If you are on a public or corporate network, using a cable modem, or just paranoid, while in Users and Groups go to the File menu and select New User. Name the new user and give him or her a password. If it's just you, you've already given yourself a password in File Sharing. When you are done, close the Users and Groups control panel.
5 Now you have to select what to share. If it's just you, or you and your loved ones, you probably want to share your entire hard drive. If you are on a network with many other Macs, you want to retain control, so you may want to make a new folder called "Shared" and only share that.
6 With OS 8.5 and up, click on the icon of your hard drive or the folder you want to share and highlight it. Select "Get Info" from the File Menu (or press -I), then in the Info window select "Show:Sharing" from the pop-up menu, and check the box "Share this item and its contents." You can then adjust privileges for any users you created.
With OS 8.1 and down, click on the icon of your hard drive or the folder you want to share and highlight it. Go to the File menu and select Sharing…, then check the top box "Share this item and its contents." You can then adjust privileges for any users you created.
7 That was a lot of work, but you only had to do it once. In the future you only need to

use the File Sharing (or Sharing Setup) control panel (or the control strip) to turn sharing on and off.

Now that you've shared a computer, you can access it from any other computer connected to the same network.

1 Go to one of those computers and open the Chooser under the Apple menu. On the left side should be a bunch of icons. Click on the one that says AppleShare.
2 On the right side you should see a window that says "Select a file server:", and if you have successfully shared and networked your computer, you'll see it listed there. Highlight the name of the shared computer and click OK.
3 If you took the trusting approach, click on Guest, otherwise enter a user name and password that you previously set on the other computer. Then click OK. Next you'll see a list of the shared drives or folders on the other computer (probably just one). Highlight the one you want and click OK. In a few seconds the icon of that drive or folder should appear on your desktop. You can copy files to and from it as though it was another drive on your computer (but it will be much slower).
4 To avoid ever having to repeat steps one to three, click on the icon of the shared volume and select Make Alias from the File menu. Next time you want to "mount" that shared volume on your Mac, just double-click on the alias.

What if I tried to follow these instructions and didn't find the control panels or choices I expected?

You may not have all the file sharing items installed in the System on your computer, or you may have used an Extensions Manager to get some of them out of the way because you didn't need them. Find your System installer disks or CD-ROM, open the installer, select "Custom Install" or "Add/Remove", and reinstall AppeShare, Open Transport and File Sharing, all found under the "Network & Connectivity" selection. On older Macs, reinstall AppleShare and File Sharing. Although you need System 7 or higher to enable file sharing, you can access a shared Mac from a computer running System 6—you just need to use the System 6 installer disk to install "AppleShare Client" software on the System 6 Mac.

File sharing works well, but now my Mac is very slow to start up and takes an awfully long time to shut down after I tell it to.

If file sharing is turned on, your Mac goes through an elaborate private ritual every time it boots up, checking the sharing status of every folder on your drive. When you shut down, your computer carefully unshares every folder on your drive before it will shut down. So, when you aren't using file sharing, turn it off. If you have a control strip, there is an icon for disabling file sharing. There's also an icon for AppleTalk, and if you turn off AppleTalk, file sharing will go off too (unless you are using AppleTalk remote access). AppleTalk uses extra battery power, so leave it off when you are "on the road" with your PowerBook.

Why didn't it work when you asked your wife to follow these instructions?

Because I use AppleTalk Remote Access on my computer, my Network (or AppleTalk) control panel was set to Remote Only instead of LocalTalk Built-in. That meant that her shared PowerBook didn't show up in my Chooser. It was very embarrassing and I started pulling cables every which way before I figured it out.

Why didn't you answer my most important question?

Sorry, we ran out of room. Please email help@tekserve.com and we'll try to help. If you notice any errors in this FAQ, please send us a note by mail or email. Thanks!

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